

AD-A250 263



②

NAVAL WAR COLLEGE
Newport, R.I.

**CLOSE AIR SUPPORT: A CASE OF JOINT
OPERATIONAL CAPABILITY OR JOINT RHETORIC**

by

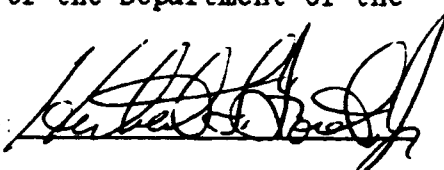
Herbert L. Foret, Jr.
Major, USAF

13 February 1992

DTIC
SELECTE
S B D
MAY 13 1992

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: 

June 1992 Graduation

Paper directed by Captain H. Ward Clark
Chairman, Department of Military Operations

Faculty Research Advisor, Lt. Colonel Ronnie D. Roland, USAF
Instructor, Department of Military Operations

Approved by


Faculty Research Advisor

12 Feb 92
Date

DISTRIBUTION STATEMENT A

Approved for public release
Distribution Unlimited

92-12710



92 5 11 132

REPORT DOCUMENTATION PAGE



1a REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b RESTRICTIVE MARKINGS	
2a SECURITY CLASSIFICATION AUTHORITY		3 DISTRIBUTION/AVAILABILITY OF REPORT DISTRIBUTION STATEMENT A: Approved for Public Release; distribution is unlimited.	
2b DECLASSIFICATION/DOWNGRADING SCHEDULE		5 MONITORING ORGANIZATION REPORT NUMBER(S)	
4 PERFORMING ORGANIZATION REPORT NUMBER(S)		7a NAME OF MONITORING ORGANIZATION	
6a NAME OF PERFORMING ORGANIZATION OPERATIONS DEPARTMENT	6b OFFICE SYMBOL (If applicable) C	7b ADDRESS (City, State, and ZIP Code)	
6c ADDRESS (City, State, and ZIP Code) NAVAL WAR COLLEGE NEWPORT, R.I. 02841		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8a NAME OF FUNDING/SPONSORING ORGANIZATION	8b OFFICE SYMBOL (If applicable)	10 SOURCE OF FUNDING NUMBERS	
8c ADDRESS (City, State, and ZIP Code)		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) Close Air Support: A Case of Joint Operational Capability or Joint Rhetoric (Unclassified)			
12. PERSONAL AUTHOR(S) Herbert L. Foret, Jr., Major, U.S. Air Force			
13a. TYPE OF REPORT FINAL	13b TIME COVERED FROM TO	14. DATE OF REPORT (Year, Month, Day) 1992 February 13	15 PAGE COUNT 28
16 SUPPLEMENTARY NOTATION A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.			
17 COSATI CODES		18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
19 ABSTRACT (Continue on reverse if necessary and identify by block number) The purpose of this paper is to illustrate the joint operational capability of Close Air Support (CAS). The analysis focuses on AirLand Operations of a theater campaign. Until recently, CAS has been hindered by misperceptions, doubts concerning commitment to the mission, and unfulfilled expectations. Refined doctrines, unity of command and effort, synchronized direction, and interoperability initiatives have made CAS a more effective joint operation. CAS presents the operational level commander with unique options. Limitations have been recognized and continue to be minimized. Technological advances and improvements in communication systems have improved CAS as a joint operation. CAS must continue to be emphasized at the operational level of command in joint exercises and formal evaluations. A cadre of CAS trained joint personnel should be developed to enhance future CAS operations. Technology and commitment are the keys to the future.			
20 DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS		21 ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a NAME OF RESPONSIBLE INDIVIDUAL CHAIRMAN, OPERATIONS DEPARTMENT		22b TELEPHONE (Include Area Code) 841-3414	22c OFFICE SYMBOL C



Abstract of
**Close Air Support: A Case of Joint Operational Capability or
Joint Rhetoric**

The purpose of this paper is to illustrate the joint operational capability of Close Air Support (CAS). The analysis focuses on AirLand Operations of a theater campaign. Until recently, CAS has been hindered by misperceptions, doubts concerning commitment to the mission, and unfulfilled expectations. Refined doctrines, unity of command and effort, synchronized direction, and interoperability initiatives have made CAS a more effective joint operation. CAS presents the operational level commander with unique options. Limitations have been recognized and continue to be minimized. Technological advances and improvements in communication systems have improved CAS as a joint operation. CAS must continue to be emphasized at the operational level of command in joint exercises and formal evaluations. A cadre of CAS trained joint personnel should be developed to enhance future CAS operations. Technology and commitment to CAS are the keys to the future.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification _____	
By _____	
Distribution/ _____	
Availability Codes	
Dist	Avail and/or Special
A-1	



TABLE OF CONTENTS

CHAPTER	PAGE
ABSTRACT	ii
LIST OF ILLUSTRATIONS	iv
I INTRODUCTION	1
The Problem	1
Overview	2
II COMMON DOCTRINE DEVELOPS JOINTNESS	3
Summary	7
III UNITY OF COMMAND	8
Direction	8
Execution	10
Summary	12
IV INTEROPERABILITY	13
Summary	15
V CAPABILITIES AND LIMITATIONS	16
Capabilities	16
Limitations	16
Summary	19
VI ENHANCEMENTS AND CONCLUSION	20
Enhancements	20
Conclusion	22
VII RECOMMENDATIONS	23
NOTES	25
BIBLIOGRAPHY	26



LIST OF ILLUSTRATIONS

FIGURE	PAGE
1. AirLand Operations	4
2. Command and Control	9
3. Coordination and Flow for CAS	9



CHAPTER I

INTRODUCTION

Until recently, CAS has been hindered by misperceptions and unfulfilled expectations. Ground forces were obsessed with the idea that air power could best be employed when ground forces were in close contact with the enemy. Ground forces believed CAS was a substitute for insufficient artillery support or deficient firepower. CAS was considered an alternative to tactical reserves and requested when the outcome of the ground engagement was in doubt. On the other hand, air power advocates perceived ground forces as being unable to effectively integrate air assets into close battles. Many believed CAS was inefficient because it was applied piecemeal and violated the principle of concentration of mass. Commitment to the mission was questioned from top to bottom. Therefore, CAS was perceived as being a less than optimum joint operation and was considered noneffective. Doctrinal differences concerning the application of CAS caused misunderstandings and frustration. But, "That was then, and this is now."

Air Force commanders addressed the commitment issue at a recent Congressional hearing. At that hearing, the Air Force stated that it was 100% committed to supporting the U.S. Army. It had demonstrated that support in the past, is supporting the Army today, and will continue to support the Army in the future. Air Force leaders illustrated their commitment with statistics. CAS is the primary mission in 28% of the tactical Air Forces' designated operational capability statements. An additional 50% of the force can be tasked to perform CAS.¹ The Air Force



platforms that are dedicated to CAS are A-10s, multi-role F-16s, and AC-130s. Additionally, Air Force personnel are involved in every aspect of the CAS operation. Air Force personnel perform duties as Air Liaison Officers (ALOs), Forward Air Controllers (FACs), Air Support Operations Center (ASOC) directors and as air advisors to ground commanders at every level. This commitment fostered dedication to joint capability and interoperability. Commitment, coupled with technology and directives of the Goldwater-Nichols Act, led to the evolutionary development of joint and individual service doctrines. These doctrines have influenced the resolution of many of the deficiencies which have plagued CAS in the past.

As a result of these initiatives, CAS is an effective joint operation from top to bottom and sets the standard for jointness. In order to make a case for this assertion, we must look at how CAS meets and exceeds the standards for being an effective joint operation. The major elements of jointness addressed in this paper include common doctrine, unity of command, centralized direction, decentralized execution, and interoperability. We must also analyze the capabilities and limitations of CAS from the operational commander's perspective to determine CAS effectiveness in the joint arena. The paper concludes with an analysis of future enhancements and recommendations for more efficient CAS operations in future joint campaigns.



CHAPTER II

COMMON DOCTRINE DEVELOPS JOINTNESS

The analysis of Close Air Support (CAS) should begin with an understanding of the mission. According to Air Force Doctrine, Air Force Manual 1-1, CAS consists of air action against enemy targets in close proximity to friendly forces. It is different from other air support missions because it requires detailed integration of each air mission with forces and with the fire and maneuver of those friendly forces.¹ The Air Force is tasked to perform CAS in accordance with JCS PUB 0-2. The Air Force has specific responsibility for developing, in coordination with other Services, doctrines and procedures.² Doctrine is the foundation upon which CAS was developed as an effective joint operation.

Recently released Army and Air Force doctrines are well coordinated and represent joint agreements on the most effective and efficient methods to apply aerospace power in support of ground forces. Land and air operations are well defined. General John W. Foss, Commander of the Army's Training and Doctrine Command, stated that the development and publication of TRADOC 525-5, AirLand Operations, A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond, was a unique concept. It was unique because AirLand Operations had been accepted by Tactical Air Command for the development of joint operational procedures, Army and Tactical Air Forces doctrine, and Army and Air Force air attack action plans for joint warfighting on future battlefields.³ The Commander of Tactical Air Command, General John M. Loh, cosigned the concept which forms the foundation for joint power projection operations across the spectrum of conflict. The agreement



illustrated an acceptance that each service was equal in their support and contribution toward theater or campaign objectives

The central theme of the concept for AirLand Operations is the integration of land and air operations. The current concept highlights the importance of maneuver and the overlap of operational capabilities of all services. The AirLand Operations concept stresses the importance of nonlinear, high tempo, fluid scenarios. The concept more accurately depicts the battlefield based on objectives rather than ill-defined lines of confrontation. Interaction and coordination are evident throughout.

The figure below, from TRADOC 525-5, depicts the interaction of land and air operations. The overall picture highlights the complexities involved especially in the Joint Battle Area. It is here that CAS must be integrated and properly applied as a joint operation.

THEATER PLAN FOR AIRLAND OPERATIONS

LAND OPERATIONS

Intelligence Systems
Special Operations

Joint Intelligence &
Air Attack Area

AIR OPERATIONS

Intelligence Systems
Strategic Targets
Offensive Counterair
Interdiction
Special Operations

MLRS/ATACMS
Maneuver
Fire Support
Air Cavalry/Attack
Helicopters
Special Operations

JOINT BATTLE AREA

Interdiction/Battle-
Field Air Interdiction
CLOSE AIR SUPPORT
Defensive Counterair
Special Operations

TBM Defense
Radar Area Security
Logistics Area
Deployment Area
Special Operations

Joint Staging/
Dispersal Area

JOINT AIR DEFENSE

Defensive Counterair
Logistics
Basing
Airlift

Figure 1.4



Army and Air Force doctrines recognize the importance of synergistic effects in the joint battle area. CAS provides the capability to employ overwhelming firepower at decisive locations and times. It can be preplanned or immediate depending on the needs of the ground commanders.

Current doctrine clearly establishes that aerospace control is the most important priority. Aerospace control, through offensive and defensive counterair missions, provide friendly ground forces the opportunity to operate more effectively and denies that advantage to the enemy.⁵ Aerospace control permits ground forces to move freely and provides branches and sequels of action. Thus, ground forces operate more effectively with less attrition.

Strategic and interdiction missions are the next most important role for air power. They impact on theater objectives by influencing combat across the spectrum. Interdiction disrupts, delays, or destroys an enemy's military potential before it can be used against friendly forces.⁶ Interdiction missions conducted close to battle areas have more immediate effects and help shape the area for successful ground operations. Once the battle area has been prepared for decisive operations, CAS becomes the most critical application of aerospace forces.

Common doctrine establishes the requirement for ground component commanders and air component commanders to determine the effort applied to CAS. Doctrine directs judgement when determining priorities of missions. CAS is no longer the only means to deliver unmatched firepower when and where it is needed. As Figure 1 illustrated, there are many options available to the theater commander. When overwhelming firepower is needed however, fighter assets can provide it the best. For example, one F-16 can deliver 8000 pounds of ordnance in one pass and destroy bunkers or



hardened defenses which may be beyond the capability of artillery. CAS is flexible and can be responsive to operational requirements if properly managed. It can help create breakthroughs, cover retreats, and guard flanks.⁷ CAS is capable of providing immediate damage assessments which can help ground forces evaluate the situation and take appropriate actions. It should be noted that "the fog of war" can degrade that capability quickly. CAS provides opportunities for maneuver and can give ground forces the ability to prosecute the attack with renewed initiative. It has the effect of extending the potential for success by delaying the culminating point.

Current doctrine has evolved to place increased emphasis on employing CAS in coordination with army aviation assets (AH-64 Apache helicopters) and ground launched missile systems (Multiple Launch Rocket Systems and Army Tactical Missile System). This joint application of force emphasizes the importance of the principle of concentration of firepower. The joint application of firepower reduces risk to aviation assets by saturating enemy defenses. The concept for coordinated joint efforts improves survivability and overall efficiency.

Common doctrine emphasizes the importance of jointness. "One extended battlefield"⁸ depends on the integrated and mutually supporting operations of all services. CAS may be required at different locations and in varying amounts in response to ground requirements. "Areas are not fixed in their relationship to each other. They are created and modified by the operational commander as he synchronizes, orchestrates, and harmonizes the many activities that will result in success."⁹

Air Force and Army doctrine warn that CAS is the least efficient application of aerospace power because it has such a limited impact on



theater objectives. Conversely, CAS can have immediate physical and psychological effects on enemy capability. Liddell Hart recognized air power as, above all, a psychological weapon - and only short-sighted soldiers, too battle-minded, underrate the importance of psychological factors in war.¹⁰

As we continue to evaluate other supporting doctrines, one should note that Air Force Pamphlet 200-17, Targeting Doctrine, emphasizes that the most opportune time for offensive air operations is when the ground situation is most fluid, the ground fighting most intense, and the enemy's logistical support requirements are the greatest. It is at this point that CAS may be the most influential element in securing and maintaining the offensive. CAS can become a critical element in the tempo of the entire campaign and contributes by achieving intermediate objectives.

General Michael J. Dugan, former USAF Chief of Staff and recognized doctrine expert, stated that the Gulf war validated the doctrinal belief that airpower can dominate land warfare and decide the tempo of the conflict.¹¹

In summary, current doctrines provide necessary guidelines for applying CAS across the continuum of battle. Doctrine for CAS is coherent and unambiguous. Doctrine defines the priority for the roles of aerospace power and the necessity for integrated application of land and air forces as a cohesive team capitalizing on synergistic effects. CAS is flexible, adaptable and can deliver unparalleled firepower at the decisive location and time. Doctrine states that CAS is dependent on effective command and control at the operational level. The next chapter discusses the importance of jointness at the operational level of command and control.



CHAPTER III

UNITY OF COMMAND, DIRECTION AND EXECUTION

When we look at CAS we must view it from the perspective of joint warfighting and it must be fully integrated into the joint force commander's operational campaign.¹ The theater commander directs all land and air operations through the land and air component commanders. CAS is considered throughout the process of determining the most effective strategy to gain theater objectives. Thus, unity of command ensures unity of effort. Theater objectives are supported by all theater forces. Napoleon recognized the importance of this element when he said, "Nothing is more important in war than unity of command."² Figure 2 provides an example of the relationship between the theater commander and his land and air component commanders in a typical joint operation.

The Land Component Commander (LCC) and the Air Component Commander (ACC) work closely to establish target priorities in support of theater objectives. The Tactical Operations Center (TOC) establishes priorities and coordinates interdiction and CAS into the land campaign in coordination with the Battlefield Coordination Element (BCE). The Tactical Air Control Center (TACC) consolidates all requests, integrates the interdiction target lists, deconflicts targeting, programs requirements against resources, notifies the BCE of any short falls, and incorporates sorties into the air tasking order (ATO).³ This process requires joint cooperation to be effective.

Figure 3 depicts the CAS request flow from the field, to the operational level, and back down to the field for execution. Once objectives are determined, ground forces request firepower from ground and air assets. The Fire Support Element (FSE) works to integrate

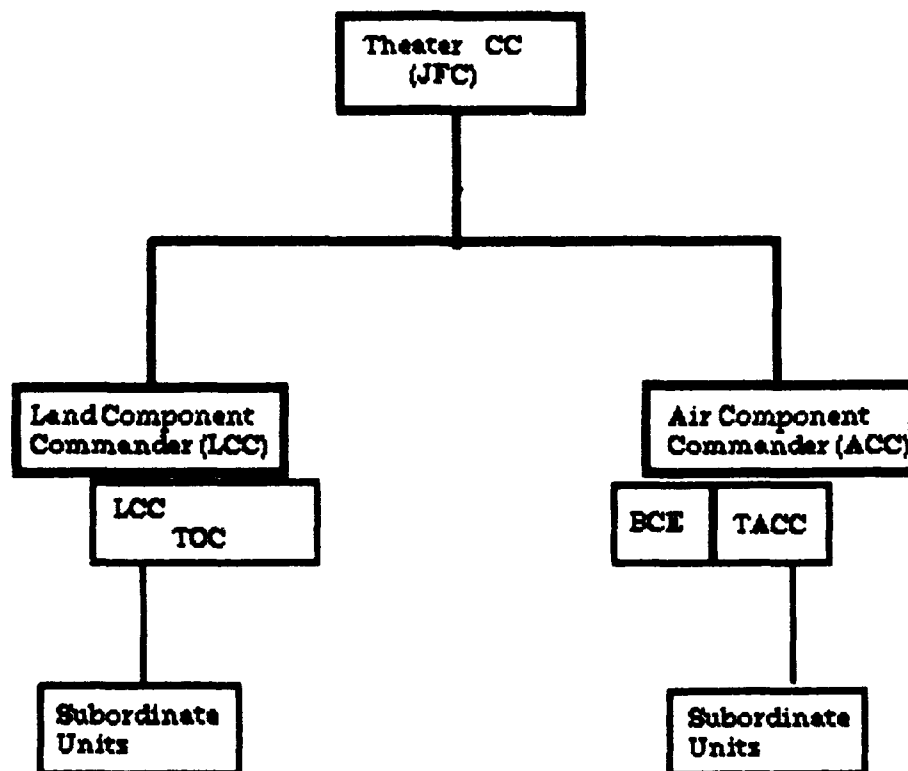
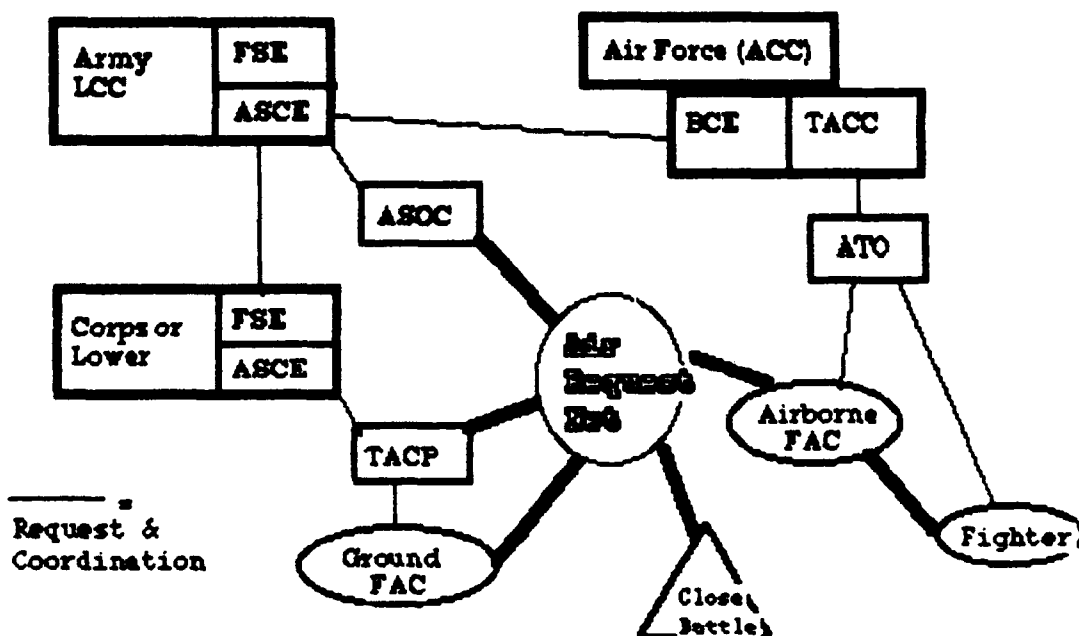


Figure 2.
Command and Control



Coordination and Flow
Figure 3.



interdiction and CAS with advise of the Air Support Coordination Element (ASCE). Once the plan is finalized, the Air Support Operations Center (ASOC) controls and directs the CAS sorties once they are made available. It is during this period that preplanned CAS is synchronized into offensive operations. Immediate CAS or CAS alert missions respond as requested by the ground commander and is coordinated through the fire control coordinator. The Tactical Air Control Party (TACP) works with the ground forces in the field to integrate the air assets at the combat level. Ground or Air Forward Air Controllers (FACs) control the CAS sorties during the actual execution phase. As CAS sorties depart the combat area, a battle damage assessment (BDA) is relayed to commanders for appropriate follow on action. Decentralized execution ensures flexibility.

It is important to understand the complexity of the process described and realize that success depends on unity of command, centralized control and decentralized execution. The entire process depends on joint cooperation and coordination. CAS is the responsibility of the Joint Force Air Component Commander (JFACC) but is only possible as long as the air and ground forces are able to work together by taking advantage of joint capabilities. As mentioned earlier, the common doctrine helps minimize friction and offers options to the theater commander.

The linchpin of the entire operation is the apportionment and allocation process. This process is an art rather than a science because it is based on operational judgement, estimates of the situation, actual capabilities and alternate courses of action. The Joint Force Commander (JFC) apportions the total expected air effort by percentage and or priority to various air operations and or geographic areas for a given



period of time.⁴ The JFACC translates the apportionment decision into the allocation of total numbers of sorties by aircraft type available for each task. CAS sorties are a percentage of the allotted sorties. This joint process synchronizes the ground and air resources to accomplish the ultimate objective. Commanders consider the principle of economy of force in order to achieve the prioritized objectives. The true challenge for joint operational commanders is to ensure that the right sorties get to the right place in a timely manner so as to influence the outcome of decisive ground operations. This is a potential weakness and is discussed in a latter chapter.

This discussion illustrated the true jointness of the CAS process and the complexity involved. The ultimate result can be both sequential and cumulative. CAS is time and situational dependent so the process must be flexible and adaptive. The entire effort provides the CAS plan for a 24 hour period and the cycle is repeated again to ensure consistent and persistent pressure on enemy forces. The Computer Aided Force Management System (CAFMS) has been helpful to disseminate information on CAS sorties to all affected units. Operational commanders, both ground and air, must not become bogged down in the daily functioning of the system but must continue to remain focused on future campaign requirements.

The process for coordinating and integrating air and ground operations is not a new challenge. In June 1942, after the British victory at El Alamein, Air Marshall Lord Tedder enunciated ten inviolable rules of air power which apply today. His third principle was

"Every night the air and ground commanders must hold a joint staff meeting to hash over problems and decide tomorrow's program. The close air support and air interdiction campaigns can then be integrated into the ground commander's



overall concept of operations."5

AirLand CAS operations are very similar to Marine Air Ground Task Force (MAGTF) close support operations. On the other hand, Marine CAS operations are different based on the principle that air assets are organic to the amphibious forces and are not tasked to perform secondary missions. The sole purpose of assigned air assets are to support the ground forces. With that, the Air Combat Element (ACE) operates at the tempo dictated by the ground forces. The ACE does not operate as an independent element as does the Air Force in the concept of the AirLand battle. According to Marine Corps doctrine, the MAGTF operates as an independent force in support of the theater commander's directives. The command and control process is similar but less complex due to its smaller scope and size. Considering its unique capabilities to operate without fixed base support, the MAGTF provides the theater commander with CAS for amphibious operations not available through other means.

It should be obvious that the most critical element in the command and control process of CAS is communication capability. Communication must be complete, uninterrupted, secure and based on interoperability. Communication will be discussed in a following chapter.

In summary, CAS is planned, coordinated, and employed as a joint operational level asset. CAS is directed by the theater commander through the LCC and the ACC. CAS is an effective joint operation because it is the result of centralized control and decentralized execution. CAS is effective because it remains an active joint process from top to bottom. CAS is not a goal but the product of joint operational capability.



CHAPTER IV

INTEROPERABILITY

The level of jointness in any operation can be determined by evaluating interoperability. Interoperability is the ability of forces to exchange services in order to operate more effectively. Simply, it is the ability to work as a team with minimum friction. Interoperability is established through common or compatible doctrines, tactics, techniques, procedures, training methods and exercises, professional education, organizational design and material developments.¹ When CAS is evaluated against those requirements, it scores well.

CAS is based on AirLand Operations concepts and supported by common and compatible doctrines as described in the first chapter. CAS procedures are well documented and are taught at several joint schools. The Air Ground Operations School (AGOS), Hurlburt Field, instructs personnel on procedures for integrating fire support on surface targets with fire support from aerospace platforms.² The Joint Firepower Control Course also ensures personnel are prepared to operate effectively in the joint arena. Air Force personnel attend Army schools in order to perform duties as Air Liaison Officers, Air Support Operations Directors, Forward Air Controllers, and team members on the Tactical Air Control Parties. Air Force personnel also perform airborne duties and jump into battle areas with ground forces. The Jump Air Liaison Officer is then available to advise ground commanders on air support in every situation. Air Force personnel are assigned to Army units while performing these duties. The integration of Air Force personnel into every level of command ensures complete understanding of CAS capabilities and limitations. The program



fosters interservice cooperation and demonstrates the requirement for interoperability.

CAS training exercises are conducted in every regional theater. The primary center for Army CAS training is at the Army National Training Center (NTC) at Fort Irwin, California. NTC provides ground forces the opportunity to employ as they would in actual combat. CAS assets are integrated into the daily scenarios. Procedures and performance are evaluated and methods for improvement are presented. The training helps to validate procedures and techniques while building confidence and trust between the ground and air components of airland battle.

Operational ground and air units participate in numerous joint exercises. Red Flag, conducted at Nellis AFB, affords CAS assets the opportunities to participate in live fire exercises in conjunction with realistic threat arrays. Blue Flag at Eglin AFB stresses the planning and command and control aspects. Cope Jade and Team Spirit are joint exercises conducted in South Korea. Both exercises expose forces to the environment which helps to improve awareness levels and provides hands on experience. Operational Readiness Inspections are conducted to evaluate the performance of each element of CAS employment. Inspectors evaluate the ability of ground and air forces to perform the mission as tasked. The inspections simulate real world scenarios and impose the pressures of conflict. All elements of the CAS mission are evaluated from command-and-control to actual execution and reconstitution. The exercises and training develop teamwork and enhance the joint process.

One graphic example of total interoperability is the Joint Air Attack Team (JAAT). The objective of JAAT is to concentrate firepower from artillery, attack helicopters, and tactical fighter aircraft. The process



involves the suppression of enemy forces with artillery followed by suppressive firepower from the attack helicopters. Fighter aircraft are then sequenced into the fight resulting in overwhelming force.³ This procedure is a variation of "hyper" CAS and is best employed against airfields, heavily defended enemy strongholds, or important field objectives. Joint cooperation is intense and JAAT can only be successful if accomplished as a team.

The Army and Air Force share common equipment and train together to optimize unique capabilities of each service. Artillery and advanced ground to ground systems suppress enemy defenses. Army aviation assets attack enemy armored equipment with the Hellfire anti-armor missile system. Air Force air assets employ precision guided munitions such as the air-to-ground Maverick to destroy tanks and reinforced enemy positions. Fighters also deliver area denial and anti-personnel ordnance as required. The effects of the different ordnances are critical to the ground forces for future operations. The result is a joint effort to produce the required conditions for success. Forces in CAS are planned and executed as a joint operation.

Summarizing, CAS is an effective joint operation because interoperability contributes at every level. Interoperability expands the strategic and tactical options of joint commanders. CAS doctrines, procedures, training, and exercises emphasize the importance of working as a team through physical action minimizing the friction between ground and air components.



CHAPTER V

CAPABILITIES and LIMITATIONS

An analysis of the joint operational capability of CAS would not be complete without looking at its capabilities and limitations. The challenge for the operational level commander and his staff is to exploit capabilities and minimize the impact of system limitations. Just as CAS is a joint operation, commanders are taking a joint perspective to improve capabilities and correct deficiencies.

CAS capabilities were developed from doctrinal concepts addressed earlier. In review, CAS is flexible, adaptable, and produces immediate effects at decisive times and locations across the entire theater. CAS can provide ground forces an option for maneuver and gives them added initiative to press the attack. CAS can have psychological impacts which are not measurable but become cumulative over time. CAS may be the only operation capable of producing an offensive breakthrough or protect flanks or tactical retreats. CAS provides immediate battle damage assessments which could be critical for executing subsequent ground actions.

Turning to limitations, CAS is highly dependent on command, control, and communication. Commanders recognized this as the center of gravity and adopted several initiatives. Military Satellite Communication Systems have been established to ensure uninterrupted and secure communication to all levels. Joint Communication Electronic Operating Instructions have been published to provide communication nets for all CAS elements.

CAS is least efficient if employed in bits and pieces and can limit the offensive or defensive initiative for attack. Doctrinal concepts encourage operational commanders to apply CAS in conjunction with other theater offensive actions. Since CAS is such a perishable and valuable



asset, operational level commanders must direct it so that it is being applied in coordination with other theater operations. CAS must be requested as early as possible to ensure that the proper ordnance is delivered. Timing is critical and most difficult during the defense.

Joint forces find it difficult to communicate up and down the chain of command in order to direct CAS as requested. Operational level staffs must anticipate opportunities for interjecting CAS or direct the use of alternate forms of firepower which may be more effective. The operational level must be able to make decisions because it is at that level that component commanders have the best vision of the entire theater.

Another limitation is that CAS could lead to high attrition and result in unacceptable losses for the operational commander. CAS must attack in conjunction with maneuver in order to avoid the highest concentration of anti-air defenses. CAS is effective only if it is integrated into the fire control sequencing. Refined doctrines have minimized this limitation. JCS PUB 3-09, Doctrine for Joint Fire Support, establishes procedures for integrating all forms of fire.

The single most limiting factor is fratricide. Fratricide can be disastrous and cause operators to be overly cautious. Fratricide destroys trust and confidence and can inhibit CAS effectiveness for the duration of the conflict. JCS PUB 3-52, Doctrine for Joint Airspace Control, establishes guidelines for the control of airspace for artillery, unmanned aerial vehicles (UAVs), helicopters, and fighters. This is accomplished in conjunction with maneuvers on the ground and published as an air control order.

Desert Storm experienced five separate cases of air to ground fratricide. A joint effort was initiated to develop an Anti-Fratricide Identification Device. The Positive Combat Identification Task Force is



working to solve the problem and plans to field equipment during training and joint exercises ¹

The emphasis on night operations hinders CAS effectiveness because three dimensional maneuvering through fixed forward looking infrared displays is extremely difficult and disorienting. There are numerous proposals but fluid night CAS will remain difficult. Night CAS operations are most effective against preplanned targets isolated from friendly forces.

Critics of CAS could make the point that the Army is developing and expanding its Army aviation element because it is dissatisfied with fixed wing capabilities. In fact, more capable Army aviation assets such as AH-64 Apache attack helicopters add to the concentration of firepower and saturate enemy defenses. Army aviation assets also supplement the CAS effort when poor weather restricts fixed wing CAS. The development of Army aviation assets exemplify the joint requirement to provide the theater commander with more effective options in the new fluid, nonlinear environment. This is proof of a mature joint understanding and recognition that fixed wing assets may not be able to respond at the proper time and proper location.

Desert Storm provided very few lessons learned for CAS because the initial phase of interdiction and area shaping was so effective.² One point worth mentioning was the JFACC's decision to limit CAS operations of A-10 and F-16 aircraft. He restricted them to fly no lower than 10,000 feet over the target area. This reduced bombing effectiveness because of the extended bombing ranges and difficulty identifying small tactical targets. Additionally, an AC-130 was believed to be downed while performing CAS in a high threat area. Attrition figures indicated that



Marine aircraft suffered the highest attrition (.81/1000 sorties) as a result of flying CAS ³ These lessons are classic and have been documented numerous times in the past.

CAS is also limited in a high threat environment because of the difficulty locating the target on the first pass while defending against enemy fire. Without precise location of targets, it becomes difficult to plan and attack. Doctrinal concepts advise that the area for decisive operations be shaped through joint firepower prior to deciding to engage in a decisive battle. CAS assets would therefore attack areas of weakness rather than the enemy's strength.

The apportionment and allocation process limits flexibility in today's complex airland battlefield scenarios. Apportionment usually occurs 30 hours prior to mission execution and allocation 24 hours prior. Since CAS is dependent on the success of the ground forces, additional CAS sorties may not be available when needed.

In summary, operational commanders must acknowledge the risks involved with CAS and analyze all available options and alternatives. Command and control can be a serious limitation and is dependent on communication between joint agencies. Fratricide is a serious challenge and can have theater wide impact. Fixed wing CAS assets may not be able to respond as requested so Army aviation must fill the void. Attrition may limit effectiveness and may result in unacceptable losses. The next chapter addresses future enhancements.



CHAPTER VI

FUTURE ENHANCEMENTS AND CONCLUSIONS

In response to the limitations of command and control, Army and Air Force developers are in the process of testing and fielding the Joint Surveillance Target and Attack Radar System (JSTARS). JSTARS, an E-8A Boeing 707, is capable of detecting, locating, identifying, and tracking targets in any weather. JSTARS is manned by a joint team of Army and Air Force personnel. JSTARS remains in constant communication with component commanders on the ground. Operational commanders and their staffs are able to monitor repeater scopes as they receive real-time information. In combination with AWACS and the Airborne Command and Control Center (ABCCC), JSTARS is capable of directing air and ground strikes with precision and with minimum delay.¹ JSTARS will help to reduce the frustration of getting CAS to the right place in a timely manner.

JSTARS is combat proven and demonstrated its worth in a dynamic situation during the Battle for Khafji. JSTARS was able to monitor enemy actions and determine what assets were required to halt the Iraqi's advance. JSTARS was also an important element of command and control during the attacks on the mobile SCUDS. JSTARS was an important addition to the command and control process and helped to improve the process for coordinating and directing CAS. JSTARS is expected to be operational in 1997. Additional automation initiatives would help to reduce coordination time and expedite the transfer of information similar to that used to destroy mobile scuds.

The Army is expanding its use of unmanned aerial vehicles (UAVs) to enhance target acquisition and fill the gaps of the expanded nonlinear battlefield.² UAVs enhance the CAS process by locating critical enemy



positions and relaying exact locations to ground forces. In combination with hand held GPS units, the ground forces will be able to direct CAS with improved accuracy and efficiency by ensuring success on the first attack.

The most promising initiative to reduce the delay in coordinating CAS attacks is the development of the Automatic Target Handoff System (ATHS). This system eliminates the requirement for voice communication to relay target data. The procedure, known as cooperative attack, permits air liaison officers or controllers in JSTARS to transmit target data via a digital data link directly into the fighter's on board fire control computer.³ Additional accuracy is provided through laser identification and the delivery of precision guided munitions.

The major obstacle to the ATHS is the incompatibility of the Air Force's Tactical Air Request Net and the Army's TacFire communication system. This supports the conclusion that future CAS is dependent on technological advances in communication and command and control. It is imperative that future developments be conducted as a joint effort throughout the development, procurement, and employment phases. Programs that are independently developed are not compatible and must be modified to be interoperable with other joint systems.

The introduction of Special Operations Forces (SOF) into the joint battle area has helped to fill the gaps of the fluid nonlinear battlefield as well as improve CAS application in a low intensity conflict scenario. SOF can become an aggressive method to locate critical targets from within enemy held territory and direct CAS against them.

Another initiative which holds promise for the future is the creation of the Air Force composite wing at Pope AFB, NC. This new concept



places CAS assets, F-16s and A-10s, at a single location and combines them with Army assets of the Army's 82nd Airborne Division. This joint force provides the nation's "premier forcible entry capability for the future."⁴ This reinforces the concept of air and ground forces training, deploying, and employing as a joint force.

CONCLUSIONS: This paper should lead one to acknowledge that CAS is an effective joint operation from top to bottom. CAS is not perfect, but joint operational capability has been improved through actions not rhetoric. Joint and individual service doctrines are comprehensive and provide the link for air and land forces in the joint battle area. CAS is an important element in the unity of effort principle. CAS is directed by the theater commander and executed to achieve ultimate theater objectives. The entire process for CAS is based on interoperability and would not be possible if systems and procedures did not complement each other. The major weakness of CAS continues to be the complexity and time required to react to defensive scenarios where the uncertainties are too numerous to anticipate and the potential for fratricide the greatest. Initiatives and future enhancements are taking advantage of new technology and automation to minimize CAS vulnerabilities. CAS is a total team effort where actions speak louder than words.

"The future battle on the ground will be preceded by battle from the air. This will determine which of the contestants has to suffer operational and tactical disadvantages and be forced throughout the battle into adapting compromise solutions."

German General Erwin Rommel



CHAPTER VII

RECOMMENDATIONS

The evolution of Close Air Support into a more effective joint operational process is possible only if joint exercises continue to be fully funded and continue to involve all participants. Future training exercises must incorporate all assets and task them as they are expected to be tasked in combat. The joint exercises should minimize simulations and test the entire command and control, communication, and execution procedures. Individual services should practice their skills but must be tasked to perform in joint exercises to experience the challenges of joint operations and resolve interoperability issues.

Formal joint operational readiness inspections should be conducted to provide commanders in all services with an honest evaluation of combat capability. A formal report would do more to correct deficiencies than lessons learned which often go unnoticed. Joint forces are mature enough to make that commitment.

CAS would be more efficient if a cadre of "joint CAS" capable personnel were created. A cadre would provide consistency and a pool of experts for future contingencies or as advisors for crisis action teams. These experts should receive joint professional education similar to the current joint speciality officer program. Today's battlefield and weapon systems are far too complex to learn just prior to a military conflict. This cadre would also be helpful addressing CAS issues for combined operations.

The MAGTF should become more involved in CAS operations of the AirLand battle. Total involvement would enhance unique service capabilities while providing a medium to exchange new technologies and



procedures. The MAGTF could benefit from new technologies such as JSTARS. If any service elects to remain autonomous, it could find itself outclassed and unable to communicate or operate with other forces in the theater.

CAS of the future will only be effective if new systems are introduced to expedite the transfer of information and simplify the coordination process. Research and development must continue to field new systems to solve the fratricide issue and reduce the time required to apportion and allocate CAS assets. Time is the limiting factor in the entire CAS cycle. Time can be condensed through practice, interoperability, and communication technology.

Any recommendations must be accompanied by an undying commitment. General Merrill A. "Tony" McPeak, Air Force Chief of Staff, expressed his commitment to Close Air Support at a recent symposium.

"Where American troops are engaged on the ground, protecting them and making their job easy should be our principal concern. Sometimes I think we speak too glibly of air power, we forget that ultimately the true value of air power lies in its potential to determine the fate of armies. We are as committed and bullish toward close air support today as we have always been."



NOTES

Chapter I

1. U.S. Dept. of Defense, Defense Issues Vol. 3 No. 32, Close Air Support. Testimony of Maj. Gen. Albert L. Logan, USAF. (Washington: 1988), p. 1.

Chapter II

1. Basic Aerospace Doctrine of the United States Air Force. Department of the Air Force (AFM) 1-1, (Washington: Government Printing Office, 1991), p. 13.

2. Department of Defense Unified Action Armed Forces, Joint Chiefs of Staff (JCS PUB 0-2), (Washington: Government Printing Office, Dec. 1986), p. 2-14.

3. AirLand Operations. A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond. Department of the Army (TRADOC) PAM 525-5, (Fort Monroe, Virginia, August 1991), Foreword.

4. Ibid., p. 11.

5. AFM 1-1, p. 10.

6. AFM 1-1, p. 11.

7. AFM 1-1, p. 13.

8. TRADOC 525-5, p. 15.

9. TRADOC 525-5, p. 15.

10. Charles M. Westenhoff, Military Air Power (Maxwell Air Force Base, Alabama: Air University Press, 1990), p. 35.

11. "Catching Up With Doctrine." Jane's Defence Weekly, 29 June 1991, p. 1174.

Chapter III

1. Defense Issues No. 3 Vol 32, p. 2.

2. Westenhoff, p. 107.

3. Maj. Michael H. Vernon, "Air Interdiction" (Ft. Leavenworth: U.S. Army Command and General Staff College, 1986), p. 9.

4. Ibid., p. 10.

5. Westenhoff, p. 43.



Chapter IV

1. Operations, Department of the Army Field Manual (FM) 100-5, (Ft. Leavenworth: Command and General Staff College, May 1986), p. 165.
2. Department of Defense Doctrine for Joint Airspace Control in the Combat Zone, Joint Chiefs of Staff (JCS) PUB 3-09, (Washington: Government Printing Office, Apr. 1990), p. 15.
3. Walter M. Golden Jr., Capt, USA, "Artic JAAT", U S. Army Aviation Digest, March/April 1990, p. 12.

Chapter V

1. "Conduct of the Persian Gulf", An Interim Report to Congress, July 1991, p. 17-1.
2. "War Will Reshape Doctrine, But Lessons are Limited.", Aviation Week and Space Technology, April 22, 1991, p. 40.
3. Paul Weaver, "Figures That Add Up to Success," Jane's Defense Weekly, 6 April 1991, p. 531.

Chapter VI

1. Dave Nolan, "JSTARS," Airman Magazine, Nov. 1991, p. 22.
2. Miles A. Libbey, III, "See Deep Shoot Deep: UAVs on the Future Battlefield," US Army Military Review, Feb. 1991, p. 42.
3. Jay C Loundes, "Cooperative Attack," Air Force Magazine, Nov. 1991, p. 60.
4. Joe West, "McPeak Reconfirms AF Commitment to Close Air Support," Air Force Times, 10 Feb. 1992, p. 6.

Chapter VII

1. Ibid., p. 6.



BIBLIOGRAPHY

- Boatman, John. "New Plans for Army Aviation." Jane's Defense Weekly, 29 June 1991.
- "Catching Up With Doctrine." Jane's Defence Weekly, 29 June 1991, p. 1174.
- Conduct of the Persian Gulf Conflict. An Interim Report to Congress: Washington: U.S. Congress. July 1991.
- Clodfelter, Mark. The Limits of Air Power. New York: The Free Press, 1989.
- Department of the Air Force, An Introduction to Air Force Targeting, AFP 200-17. Washington: 17 Oct 1978.
- Department of the Air Force, Basic Aerospace Doctrine of the United States Air Force, Air Force Manual 1-1, Vol 1. Washington: Sept 1991.
- Department of the Army, AirLand Operations, TRADOC Pam 525-5. Fort Monroe, Va.: 1 Aug 1991.
- Department of the Army, Operations, Field Manual 100-5. Washington: 5 May 1986.
- Department of Defense Joint Chiefs of Staff, Doctrine for Unified and Joint Operations, JCS PUB 3-0. Washington: Jan 1990.
- Department of Defense Joint Chiefs of Staff, Doctrine for Joint Fire Support, JCS PUB 3-09. Washington: April 1990.
- Department of Defense Joint Chiefs of Staff, Doctrine for Joint Airspace Control in the Combat Zone, JCS PUB 3-52. Washington: 15 Aug 1991.
- Donnelly, L. Jr., General. "An Air Commander's View of Operational Art." Military Review, September 1990, pp. 79-84.
- Furr, William F., Lt Col, USAF. "Joint Doctrine - Progress, Prospects, and Problems." Airpower Journal, Fall 1991, pp. 37-42.
- Golden, Walter M., Captain, USA. "Artic JAAT." U.S. Army Aviation Digest, March/April 1990, pp. 11-13.
- Hunter, Vice Marshall, United Kingdom Royal Air Force. "The Future of Air Power." Army Defence Quarterly Journal, Vol 121, No. 1, Jan 1991.
- Loundes, Jay C. "Cooperative Attack." Air Force Magazine, November 1991, pp. 60-64.



Libbey, Miles A. "See Deep Shoot Deep: UAVs on the Future Battlefield." Army Military Review, February 1991, pp. 42-52.

Mann, Edward C., Lt. Col., USAF. "Beyond AirLand Battle: Concepts for the Future." Air Force Times, 16 December 1991, p. 51.

Meyers, Charles E., Jr. "Deep Strike Interdiction." U.S. Naval Institute Proceedings, Nov. 1980, pp. 47-52.

Nolan, Dave. "JSTARS." Airman Magazine, Nov. 1991, pp. 22-24.

Page, Joseph T., Lt. Col., U.S. Army. "The U.S. Army and Military Satellites Communications." Army Communicator, Fall 1989, pp. 22-25.

Polzkill, Dennis, Lt. U.S. Navy. "Making Interoperability Work." U.S. Naval Institute Proceedings, September 1991, pp. 50-54.

Stein, Kent O., Colonel, U.S. Marine Corps. "Airland Battle Future." Marine Corps Gazette, March 1991, pp. 44-46.

U.S. Congress, House. House Armed Services Committee. Close Air Support. Testimony, Defense Issues. Maj. Gen. Albert L. Logan. Washington, 10 March 1988.

Vernon, Michael H., Major, U.S. Army. Air Interdiction: Joint Coordination Issues for the United States Army and Air Force Conducting Coalition Warfare Within NATO Theater of Operations. Fort Leavenworth, Kansas, 11 April 1986.

"War Will Reshape Doctrine, But Lessons are Limited." Aviation Week and Space Technology, 22 April 1991, pp. 41-43.

Weaver, Paul. "Figures That Add Up To Success." Jane's Defence Weekly, 6 April 1991, p. 519.

West, Joe. "McPeak Reconfirms AF Commitment to Close Air Support." Air Force Times, 10 February 1991, p. 6.

Westenhoff, Charles M., Lt. Col., U.S. Air Force. Military Air Power. Maxwell AFB: Air University Press, 1990.

Worden, John A., Colonel, U.S. Air Force. The Air Campaign. Planning for Combat. Washington: Pergamon-Brassey's Defense Publishers, 1989.